



## SUBJECT OUTLINE

### 1. Programme of study description

1.1.	THE "CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY
1.2.	THE FACULTY OF MEDICINE <b>General Medicine</b> / THE CLINICAL DEPARTMENT 8
1.3.	DISCIPLINE <b>Nuclear Medicine</b>
1.4.	DOMAIN OF STUDY: Healthcare – regulated sector within the EU
1.5.	CYCLE OF STUDIES: BACHELOR'S DEGREE
1.6.	PROGRAMME OF STUDY: <b>MEDICINE</b>

### 2. Subject description

2.1.	Name of the <b>elective</b> subject within the discipline: APPLICATIONS OF NUCLEAR MEDICINE IN CLINICAL PRACTICE						
2.2.	Location of the discipline: INSTITUTE OF ONCOLOGY "PROF. DR. ALEXANDRU TRESTIOREANU"						
2.3.	Course tenured coordinator: Conf. univ. Dr. Mirela Gherghe						
2.4.	Practicals/clinical rotations tenured coordinator: Conf. univ. Dr. Mirela Gherghe						
2.5. Year of study	VI	2.6. Semester	XI/XII	2.7. Type of assessment	WE	2.8. Subject classification	OPTD

### 3. Total estimated time (hours/semester of didactic activity) – teaching module

Number of hours per week	2 hours	Out of which: course			
Total number of hours from curriculum	14 hours	Out of which: course	Course: 8 hours	4 courses (S1-S4)	8 hours
Distribution of allotted time	7 weeks		2 hours/ week	3 practical workshops (presentations and clinical cases discussions) S5-S7	6 hours
Study from textbooks, courses, bibliography, and student notes					
Additional library study, study on specialized online platforms and field study					Course support
Preparing seminars / laboratories, assignments, reports, portfolios and essays					
Tutoring					
Examinations					
Other activities					
Total hours of individual study					
Number of credit points					2

### 4. Prerequisites (where applicable)

4.1. of curriculum	Anatomy, Physiology, Biophysics, Pathophysiology, Pharmacology, Radiology, Oncology
4.2. of competencies	Interpretation of CT images.

### 5. Requirements (where applicable)

5.1. for delivering the course	The course (S1-S4) will take place between 14:00 and 16:00 in the Amphitheater of the Institute of
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	Oncology "Prof. Dr. Al. Trestioreanu" in Bucharest. The courses will be presented in PowerPoint presentations using a video projector.
<b>5.2. for delivering the clinical rotation</b>	The practical workshops (discussions on clinical cases) in PowerPoint format will take place within the Clinical Laboratory of Nuclear Medicine at the Institute of Oncology "Prof. Dr. Al. Trestioreanu" in Bucharest.

#### 6. Acquired specific competencies

<b>Professional competencies (expressed through knowledge and skills)</b>	<b>C1:</b> Understanding of fundamental concepts in molecular imaging using radioactive isotopes. Getting acquainted with the physical principles of molecular imaging and the properties of radiopharmaceuticals used in nuclear medicine. <b>C2:</b> Getting acquainted with the main indications of molecular imaging in cardiology and endocrinology. <b>C3:</b> Getting acquainted with the main indications of molecular imaging in nephrology and neurology <b>C4:</b> Getting acquainted with the main indications of molecular imaging in oncological and hematological pathology.
<b>Transversal competencies (of role, of professional and personal development)</b>	<b>C1:</b> Identifying the set objectives, available resources, completion conditions, work stages, timeframes, and associated risks. <b>C2:</b> Identifying roles and responsibilities within a multidisciplinary team, applying relationship techniques, and working efficiently within the team. <b>C3:</b> Efficiently using information sources, communication resources, and professional development tools (Internet portals, specialized software applications, databases, online courses, etc.). <b>C4:</b> Identification and integration of information obtained through molecular imaging techniques into the clinical context and their utilization in the diagnostic process.

#### 7. Subject learning objectives (based on the scale of acquired specific competencies)

<b>7.1. General learning objective</b>	Identification of the main applications of molecular imaging in clinical practice. Getting acquainted with hybrid molecular imaging techniques such as SPECT-CT and PET-CT, including their indications and limitations. Encouraging the involvement of the specialist imaging physician in the multidisciplinary team for the diagnosis and treatment of various pathological conditions. By the end of the course, the student should have a knowledge of the physical principles of molecular imaging methods, the key radiopharmaceuticals used in current clinical practice, their most important clinical applications, and the limitations of these methods.
<b>7.2. Specific learning objectives</b>	The specific indications of each molecular imaging method and targeted radiopharmaceuticals therapy for certain pathological conditions, as well as the correlations with morphological imaging methods and clinical data, are essential for establishing accurate diagnosis and assessing the treatment response of patients.





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## 8. Content

8.1. Course	Teaching methods	Observations
The physical principles of molecular imaging and the radiopharmaceuticals used in the diagnosis of pathological conditions.	Direct electronic presentation (PowerPoint presentation)	2 hours
Nuclear medicine applications in cardiology and endocrinology	Direct electronic presentation (PowerPoint presentation)	2 hours
Nuclear medicine applications in nephrology and neurology	Direct electronic presentation (PowerPoint presentation)	2 hours
Nuclear medicine applications in oncology and hematology	Direct electronic presentation (PowerPoint presentation)	2 hours
8.2. Clinical rotation	Teaching methods	Observations
The presentation of selected clinical cases from the Clinical Laboratory of Nuclear Medicine, SPECT-CT, and PET-CT.	PowerPoint presentation and direct access to the laboratory's database	6 hours

### Bibliography for course and clinical rotation

1. European Guideline of Nuclear Medicine 2020 - Paolo Castellucci (Chair), Désirée Deandreis, Áron K. Krizsán, Siroos Mirzaei, John Prior, Bernhard Sattler.
2. Nuclear Medicine and Molecular Imaging: The Requisites, 5th Edition 2020 - Janis P. O'Malley & Harvey A. Ziessman & James H. Thrall
3. Nuclear Medicine and Molecular Imaging: Case Review Series, 3rd Edition 2019 - Lilja B Solnes & Harvey A. Ziessman

## 9. Corroboration of the subject content with the expectations of the representatives of the epistemic community, professional associations, and major employers in the field of the programme of study

Proper training at the end of the course provides the prerequisites for admission to the residency program and successful medical practice in the field of medical imaging.

The main objective of the course is to familiarize sixth-year students with the basic principles of nuclear medicine and molecular imaging, along with its indications and limitations.

Students who complete the courses and practical work will acquire fundamental knowledge in nuclear medicine and molecular imaging, as well as the indications for the most common applications of nuclear medicine in pathological conditions

## 10. Assessment

Type of activity	Assessment criteria	Assessment methods	Assessment weighting within the final grade
Course	The knowledge of theoretical concepts	Written exam - multiple-choice test.	70



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**The Quality Assurance Commission**

	taught during the courses		
Clinical rotation	Interpreting molecular imaging studies	Practical exam - presenting images from the most common pathology	30
Minimum performance standard		At least 50% in each component of the assessment	

**Date of filing**

25.09.2023

**Signature of the course tenured coordinator**

**Conf. univ. Dr. Mirela Gherghe**

**Signature of the seminar tenured coordinator**

**Conf. univ. Dr. Mirela Gherghe**

**Date of approval in the Council of the Department:**

**Signature of the Head of the Department**

**Prof. Univ. Dr. Daniel Coriu**